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# NASA Procedural Requirements

**NPR 8900.1**

Effective Date: May 23, 2008

Expiration Date: May 23,  
2013**COMPLIANCE IS MANDATORY**[Printable Format \(PDF\)](#)

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 (NASA Only)

## **Subject: Health and Medical Requirements for Human Space Exploration**

**Responsible Office: Office of the Chief Health & Medical Officer**[| TOC](#) | [Preface](#) | [Chapter1](#) | [Chapter2](#) | [Chapter3](#) | [AppendixA](#) | [AppendixB](#) | [AppendixC](#) |  
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## **Chapter 1. Institutional and Programmatic Health and Medical Requirements and Responsibilities for Human Space Exploration**

### **1.1 Overview**

1.1.1 As stated in NPD 8900.5, NASA Health and Medical Policy for Human Space Exploration, it is NASA policy to provide a safe and healthy environment for crewmembers, including provision of health and medical care systems, programs, and countermeasures for all mission phases; establishment of health and medical, habitability, and environmental standards; and sponsorship of health-related and clinical research.

1.1.2 The policies for NASA medical operations and astronaut care are provided in NPD 8900.1, NASA Medical Operations Responsibilities in Support of Human Space Flight, and NPD 8900.3, Astronaut Medical and Dental Observation Study and Care Program.

1.1.3 The policy for protection of human research subjects is provided in NPD 7100.8, Protection of Human Research Subjects.

### **1.2 NASA Health and Medical Standards for Human Space Exploration**

1.2.1 NASA health and medical standards for human space exploration shall be established according to the process presented in Appendix C.

1.2.2 Health and medical standards shall be established and documented as follows:

- a. Standards that address health and medical screening, evaluation, and certification of crewmembers will be established and documented in OCHMO 80771201MED, NASA Crewmember Medical Standards.
- b. Standards that address crewmember health and behavioral health maintenance, preventive programs, space permissible exposure limits (SPELs), permissible outcome limits (POLs), and fitness for duty (FFD) will be established and documented in NASA-STD-3001, NASA Space Flight Human System Standard, Volume 1 - Crew Health.
- c. Standards that address medical levels of care for all human space flight programs will be established and documented in NASA-STD-3001, NASA Space Flight Human System Standard, Volume 1 - Crew Health.
- d. Current standards that address habitability and environmental health, including atmospheric composition and pressure, air and water quality and monitoring, acceleration, acoustics, vibration, radiation, thermal environment, combined environmental effects, and human factors, are documented in NASA-STD-3000, Volumes I-II, Man-Systems Integration Standards.

1.2.3 The health and medical standards described in 1.2.2 shall apply to all NASA human space flight programs.

#### 1.2.4 Management and Privacy of Medical Information.

- a. Collection, control of records, communications, and public release of all astronaut medical care, biomedical, and medical research data shall comply with the privacy requirements of NPR 1382.1 and the provisions of the Privacy Act of 1974, as amended.
- b. Records will be disposed of in accordance with NPR 1441.1.

### 1.3 Institutional Roles and Responsibilities

#### 1.3.1 General

- a. The roles and responsibilities of senior management are defined in part in NPD 1000.0, NASA Governance and Strategic Management, and NPD 1000.3, The NASA Organization. NPD 8900.5, NASA Health and Medical Policy for Human Space Exploration, defines explicit health and medical responsibilities for human space exploration; and NPR 7120.5, NASA Space Flight Program and Project Management Requirements; NPD 7120.4, Program/Project Management Policies; and other NASA directives define the explicit program/project management responsibilities of program and project managers. This NPR establishes health and medical processes for human space flight and the responsibilities for their implementation.
- b. The NASA CHMO shall serve as the Office of Primary Responsibility providing leadership, policy direction, assessment, and coordination of the technical requirements and process compliance verification for this NPR.

#### 1.3.2 The CHMO shall be responsible for:

- a. Promulgating health and medical policy.
- b. Serving as NASA independent HMTA.
- c. Establishing and maintaining mission-specific human health and medical standards for space flight.
- d. Reviewing and approving all human health-related and medical requirements for space exploration.
- e. Reviewing and approving all human health-related research requirements and deliverables.
- f. Approving operational implementation of research deliverables that enable human space exploration.
- g. Approving operational use of health and medical systems and technologies prior to their use in space exploration.
- h. Consulting with the Science Mission Directorate (SMD) to ensure that human health and medical-related planetary protection requirements for space exploration are coordinated with existing health and medical policy for human space exploration.

#### 1.3.3 The Exploration Systems Mission Directorate (ESMD) shall be responsible for:

- a. Formulating human health-related and medical requirements that meet Agency-level human system standards.
- b. Defining, planning, conducting, and overseeing NASA-sponsored, human health-related research and technology development.
- c. Developing human health-related research and technology deliverables to an appropriate stage of readiness level for final review, approval, and implementation.

#### 1.3.4 The Space Operations Mission Directorate (SOMD) shall be responsible for:

- a. Designating a senior manager for space crew health and safety to advise the Associate Administrator (AA) for SOMD on crew health and medical issues.
- b. Recommending requirements for space medicine and countermeasures and proposing milestones for deliverables.
- c. Providing on-orbit resources necessary to meet these milestones.
- d. Recommending policies applicable to crew health and medical matters.
- e. Reviewing space medicine operations and results on a periodic basis.
- f. Collaborating with the ESMD regarding health care research-related issues, as appropriate.
- g. Overseeing the implementation of health-related research products and deliverables once approved.

#### 1.3.5 The SMD shall be responsible for:

Coordinating with the CHMO regarding health and medical issues related to planetary protection for human space

exploration.

1.3.6 In compliance with the established health and medical standards described in section 1.2.2, the Johnson Space Center (JSC) shall be responsible for:

- a. Concurring with the NASA HMTA appointment of a JSC Chief Medical Officer (CMO) to exercise health and medical technical authority for activities conducted at that Center and providing a JSC HMTA Implementation Plan, as described in section 1.4 of this NPR and NPR 7120.5, NASA Space Flight Program and Project Management Requirements.
- b. Assurance by the JSC CMO that NASA programs and projects resident at the JSC are in compliance with established health and medical standards through the process specified in the JSC Health and HMTA Implementation Plan.
- c. Providing recommendations for health and medical, environmental, and human factors standards and requirements. Note: Other Centers may also recommend such standards and requirements.
- d. Medically screening, evaluating, and certifying crewmembers.
- e. Conducting clinical evaluations and monitoring of astronaut health at regular intervals to determine medical status during ground-based training and space flight.
- f. Providing medical care to maintain the crewmember's ability to perform assigned duties before, during, and after space flight.
- g. Providing health maintenance and preventive care to maintain the crewmember's ability to perform assigned duties before, during, and after space flight.
- h. Providing postflight health rehabilitation to assist the astronaut to return to functional baselines in the areas of physical fitness and physiological and behavioral health.
- i. Providing mission-specific medical and behavioral health training for crewmembers.
- j. Providing programs aimed at maintaining the health status and performance of crewmembers to enable the ability to function and perform all assigned duties over the duration of their career as an astronaut.
- k. Establishing, implementing, and updating a program of preventative medicine based on research findings, health and medical lessons-learned, current standards of medical practice, risk management data (health effects), and expert recommendations.
- l. Developing and managing the Longitudinal Study of Astronaut Health.
- m. Conducting spacecraft and habitat environmental health evaluations to certify compliance with environmental health requirements.

## 1.4 NASA Health and Medical Technical Authority

1.4.1 The CHMO shall serve as Agency HMTA as authorized by NPD 1000.0, NASA Governance and Strategic Management, and NPD 8900.5, NASA Health and Medical Policy for Human Space Exploration; and as described in NPR 7120.5, NASA Space Flight Program and Project Management Requirements.

1.4.2 The NASA CHMO provides overall leadership of the health and medical technical authority process for space flight programs/projects, including Agency health and medical policy direction, requirements, and standards. The NASA CHMO hears appeals of the Center HMTA decisions when they cannot be resolved at lower levels.

1.4.3 The HMTA shall assure that programs and projects comply with Agency health and medical requirements at identified milestone decision points, and shall certify that programs and projects comply with Agency health and medical requirements prior to space flight missions.

1.4.4 The NASA CHMO shall implement HMTA at applicable NASA Centers.

1.4.5 For applicable NASA Centers, the NASA CHMO appoints, with the concurrence of the NASA Center Director, a Center CMO who shall exercise health and medical technical authority for that Center.

1.4.6 Applicable NASA Centers shall develop a HMTA Implementation Plan to execute technical authority with organizational separation of health and medical technical authority from programs and projects.

- a. The CMO shall be responsible for HMTA implementation.
- b. The Center CMO shall ensure that qualified discipline expertise is engaged to support programs and projects and shall establish appropriate delegations of authority to efficiently support program and project day-to-day operations with the concurrence of the NASA Chief Health and Medical Officer.

c. The Center CMO shall be responsible for approving changes to, and waivers of, all HMTA-owned requirements. The HMTA is responsible for assuring that changes to, and waivers of, technical requirements are submitted to and acted on by the appropriate level of HMTA.

d. The Center CMO shall disposition appeals of standards and requirements and report to the NASA CHMO.

1.4.7 Clinical decision making shall continue in accordance with the NASA Medical Policy Board (MPB) and Aerospace Medicine Board (AMB) responsibilities specified in NPD 1000.3, The NASA Organization.

1.4.8 Unresolved health and medical issues within a team will be elevated to achieve resolution at the appropriate level. At the discretion of the dissenting person(s), a decision may be appealed to the next higher level of management for resolution. Dissenting opinions raised by the HMTA are handled by the process set forth in NPR 7120.5D, NASA Space Flight Program and Project Management Requirements.

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